```
< 10> Albertsen, Hans
      Anand, Rakesh
      Carlson, Mary
      Groden, Joanna
Hedge, Philip John
      loslyn,\Geoff
      Kinzler, Kenneth
Markham, lexander Fred
Nakamura, Yusuke
       Thliveris, Andrew
       Vogelstein, Kert
       White, Raymond L.
<120> APC Antibodies
 <130> 001107.78817
 <140> US 09/442,489
 <141> 1999-11-18
 <150> US 08/452,654
 <151> 1995-05-25
 <150> US 08/289,548
 <151> 1994-08-12
 <150> US 07/741,940
  <151> 1991-08-08
  <160> 154
  <170> FastSEQ for Windows Version 4.0
  <210> 1
  <211> 9606
  <212> DNA
  <213> Homo sapiens
  ggactcggaa atgaggtcca agggtagcca aggatggctg cagcttcata tgatcagttg
                                                                                  60
                                                                                 120
  ttaaagcaag ttgaggcact gaagatggag aactcaaatc ttcgacaaga gctagaagat
                                                                                 180
  aattccaatc atcttacaaa actggaaact gaggcatcta atatgaagga agtacttaaa
                                                                                 240
  caactacaag gaagtattga agatgaagct atggcttctt ctggacagat tgatttatta
  gagcgtctta aagagcttaa cttagatagc agtaatttcc ctggagtaaa actgcggtca
                                                                                 300
  aaaatgtccc tccgttctta tggaagccgg gaaggatctg tatcaagccg ttctggagag
                                                                                 360
  tgcagtcctg ttcctatggg ttcatttcca agaagagggt ttgtaaatgg aagcagagaa agtactggat atttagaaga acttgagaaa gagaggtcat tgcttcttgc tgatcatgac
                                                                                 420
                                                                                 480
   aaagaagaaa aggaaaaaga ctggtattac gctcaacttc agaatctcac taaaagaata
                                                                                 540
                                                                                  600
   gatagtette etttaactga aaattttee ttacaaacag atttgaccag aaggcaattg
   gaatatgaag caaggcaaat cagagttgcg atggaagaac aactaggtac ctgccaggab
                                                                                  660
                                                                                  720
   atggaaaaac gagcacagcg aagaatagcc agaattcagc aaatcgaaaa ggacatactt
```

780 cgtatacgac agcttttaca greccaagca acagaagcag agaggtcatc tagaacaag catgaaacog gctcacatga tgctgagcgg cagaatgaag gtcaaggagt gggagaaatc 840 aacatggcaa cttctggtaa tggtcagggt tcaactacac gaatggacca tgaaacagcc 900 agtgttttga/gttctagtag cacacactct gcacctcgaa ggctgacaag tcatctggga 960 accaaggtgg aaatggtgta ttcattgttg tcaatgcttg gtactcatga taaggatgat 1020 1080 atgtcgcgaa atttgctagc tatgtctagc tcccaagaca gctgtatatc catgcgacag tctggatgtc ttcctcct catccagctt ttacatggca atgacaaaga ctctgtattg 1140 ttgggaaatt cocggggcag taaagagget egggecaggg ceagtgeage actecacaae 1200 atcattcact cadagcctga tgacaagaga ggcaggcgtg aaatccgagt ccttcatctt 1260 ttggaacaga tacgcgctta ctgtgaaacc tgttgggagt ggcaggaagc tcatgaacca 1320 ggcatggacc aggacaaaaa tccaatgcca gctcctgttg aacatcagat ctgtcctgct 1380 gtgtgtgttc taatgaact ttcatttgat gaagagcata gacatgcaat gaatgaacta 1440 gggggactac aggccattgc agaattattg caagtggact gtgaaatgta tgggcttact 1500 aatgaccact acagtat ac actaagacga tatgctggaa tggctttgac aaacttgact 1560 tttggagatg tagccaacaa ggctacgcta tgctctatga aaggctgcat gagagcactt 1620 gtggcccaac taaaatctga aagtgaagac ttacagcagg ttattgcaag tgttttgagg aatttgtctt ggcgagcaga tgtaaatagt aaaaagacgt tgcgagaagt tggaagtgtg aaagcattga tggaatgtgc ttagaagtt aaaaaggaat caaccctcaa aagcgtattg 1680 1740 1800 1860 agtgccttat ggaatttgtc agcacattgc actgagaata aagctgatat atgtgctgta gatggtgcac ttgcattttt ggttggcact cttacttacc ggagccagac aaacacttta 1920 gccattattg aaagtggagg tgggatatta cggaatgtgt ccagcttgat agctacaaat 1980 gaggaccaca ggcaaatcct aagagagaac aactgtctac aaactttatt acaacactta 2040 aaatctcata gtttgacaat agtcagtaat gcatgtggaa ctttgtggaa tctctcagca 2100 agaaatccta aagaccagga agcattatgg gacatggggg cagttagcat gctcaagaac ctcattcatt caaagcacaa aatgattgct atgggaagtg ctgcagcttt aaggaatctc 2160 2220 atggcaaata ggcctgcgaa gtacaaggat gccaatatta tgtctcctgg ctcaagcttg ccatctcttc atgttaggaa acaaaaagcc ctagaagcag aattagatgc tcagcactta tcagaaactt ttgacaatat agacaattta agtcccaagg catctcatcg tagtaagcag 2280 2340 2400 agacacaagc aaagteteta tggtgattat gtttttgaca ccaategaca tgatgataat 2460 aggtcagaca attitaatac tggcaacatg actqtccttt caccatattt gaatactaca 2520 gtgttaccca gctcctcttc atcaagagga agcttagata gttctcgttc tgaaaaagat 2580 agaagtttgg agagagaacg cggaattggt ctaggcaact accatccagc aacagaaaat 2640 ccaggaactt cttcaaagcg aggtttgcag atctccacca ctgcagccca gattgccaaa 2700 gtcatggaag aagtgtcagc cattcatacc tctcaggaag acagaagttc tgggtctacc 2760 actgaattac attgtgtgac agatgagaga aatgcactta gaagaagctc tgctgcccat 2820 acacattcaa acacttacaa tttcactaag tcggaaaatt caaataggac atgttctatg ccttatgcca aattagaata caagagatct tcaaatgata gtttaaatag tgtcagtagt 2880 2940 aatgatggtt atggtaaaag aggtcaaatg aaaccctcga tgaatccta tictgaagat 3000 gatgaaagta agttttgcag ttatggtcaa tacccagccg acctagccca taaaatacat 3060 agtgcaaatc atatggatga taatgatgga gaactagata caccaataaa ttatagtctt 3120 aaatattcag atgagcagtt gaactctgga aggcaaagtc cttcacagaa tgaaagatgg 3180 gcaagaccca aacacataat agaagatgaa ataaaacaaa gtgagcaaag acaatcaagg 3240 aatcaaagta caacttatcc tgtttatact gagagcactg atgataaaca cctcaagttc caaccacatt ttggacagca ggaatgtgtt tctccataca ggtcacggg agccaatggt 3300 3360 tcagaaacaa atcgagtggg ttctaatcat ggaattaatc aaaatgtaag ccagtctttg 3420 tgtcaagaag atgactatga agatgataag cctaccaatt atagtgaacg ttactctgaa 3480 gaagaacagc atgaagaaga agagagacca acaaattata gcataaaata taatgaagag 3540 aaacgtcatg tggatcagcc tattgattat agtttaaaat atgccacaga tattccttca 3600 tcacagaaac agtcattttc attctcaaag agttcatctg gacaaagcag haaaaccgaa 3660 catatgtett caageagtga gaatacgtee acacetteat etaatgeeaa gaggeagaat 3720 cagetecate caagttetge acagagtaga agtggteage etcaaaagge tgacattge 3780 aaagtttctt ctattaacca agaaacaata cagacttatt gtgtagaaga tactcaata 3840 tgtttttcaa gatgtagttc attatcatct ttgtcatcag ctgaagatga aataggatgt 3900 aatcagacga cacaggaagc agattctgct aataccctgc aaatagcaga aataaaagga 3960 aagattggaa ctaggtcagc tgaagatect gtgagegaag ttccagcagt gtcacagcac 4020

4080 cctagaacca aatccagcag aatgcagggt tctagtttat cttcagaatc agcaggcac aaagctgttg aaattccttc aggagcgaaa tctccctcca aaagtggtgc tcagacaccc 4140 aaaagtccac ctgaacacta tgttcaggag accecactca tgtttagcag atgtacttct 4200 gtcagttcac ttgadagttt tgagagtcgt tcgattgcca gctccgttca gagtgaacca 4260 tgcagtggaa tggtaagtgg cattataagc cccagtgatc ttccagatag ccctggacaa 4320 4380 accatgocac caagcagaag taaaacacct ccaccacctc ctcaaacagc tcaaaccaag cgagaagtac ctaaaaaaqaa agcacctact gctgaaaaga gagagagtgg acctaagcaa 4440 gctgcagtaa atgctgcagt tcagagggtc caggttcttc cagatgctga tactttatta 4500 cattttgcca cagaaagta tccagatgga ttttcttgtt catccagcct gagtgctctg agcctcgatg agccatttat acagaaagat gtggaattaa gaataatgcc tccagttcag gaaaatgaca atgggaatga acagaatca gagcagccta aagaatcaaa tgaaaaccaa 4560 4620 4680 4740 gagaaagagg cagaaaaaac tattgattct gaaaaggacc tattagatga ttcagatgat gatgatattg aaatactaga agaatgtatt atttctgcca tgccaacaaa gtcatcacgt 4800 aaaggcaaaa agccagccca gadtgcttca aaattacctc cacctgtggc aaggaaacca 4860 4920 agtcagctgc ctgtgtacaa acttctacca tcacaaaaca ggttgcaacc ccaaaagcat gttagtttta caccggggga tgatatgcca cgggtgtatt gtgttgaagg gacacctata 4980 aacttttcca cagctacatc tctaagtgat ctaacaatcg aatcccctcc aaatgagtta 5040 gctgctggag aaggagttag aggaggagca cagtcaggtg aatttgaaaa acgagatacc 5100 attectacag aaggeagaag tacagatgag geteaaggag gaaaaacete atetgtaace 5160 attectacay adyycayady tacayatyay yercadyyay yaadaacete atetytaace atacetgaat tggatgacaa taaagcagag gaaggtgata ttettgeaga atgeattaat tettgetage ceaaagggaa aagteacaay eettteegt tgaaaaagat aatggaceag gtecageaag catetgegte gtettetgea ceaaaaaaa ateagttaga tggtaagaaa aagaaaceaa etteaceagt aaaacetata eeacaaaata etgaatatag gacaegtgta 5220 5280 5340 5400 agaaaaaatg cagactcaaa aaataattta aatgctgaga gagttttctc agacaacaaa 5460 gattcaaaga aacagaattt gaaaaataat tocaaggact tcaatgataa gctcccaaat 5520 aatgaagata gagtcagagg aagttttgct tttgattcac ctcatcatta cacgcctatt 5580 gaaggaactc cttactgttt ttcacgaaat gattctttga gttctctaga ttttgatgat 5640 gatgatgttg acctttccag ggaaaaggct gaattaagaa aggcaaaaga aaataaggaa 5700 tcagaggcta aagttaccag ccacacagaa ctaacct ca accaacaatc agctaataag 5760 acacaagcta ttgcaaagca gccaataaat cgaggtcagc ctaaacccat acttcagaaa 5820 caatccactt ttccccagtc atccaaagac ataccagaca gaggggcagc aactgatgaa agttacaga atttgctat tgaaaatact ccagtttgct tttctcataa ttcctctctg agttctctca gtgacattga ccaagaaaac aacaataaag aaaatgaacc tatcaaagag actgaggccc ctgactcaca gggagaacca agtaaacctc aggcatcag ctatgctcct 5880 5940 6000 6060 aaatcatttc atgttgaaga taccccagtt tgtttctcaa gaacagttc tctcagttct 6120 cttagtattg actctgaaga tgacctgttg caggaatgta taagctccgc aatgccaaaa 6180 aagaaaaagc cttcaagact caagggtgat aatgaaaaac atagtcccag aaatatgggt 6240 ggcatattag gtgaagatct gacacttgat ttgaaagata tacagagacc agattcagaa 6300 catggtctat cccctgattc agaaaatttt gattggaaag ctattoagga aggtgcaaat 6360 tccatagtaa gtagtttaca tcaagctgct gctgctgcat gtttatatag acaagcttcg 6420 tetgatteag attecateet tteeetgaaa teaggaatet etetgggate accatteat 6480 cttacacctg atcaagaaga aaaacccttt acaagtaata aaggcccadg aattctaaaa 6540 6600 ccaggggaga aaagtacatt ggaaactaaa aagatagaat ctgaaagtaa aggaatcaaa ggaggaaaaa aagtttataa aagtttgatt actggaaaag ttcgatctaa ttcagaaatt 6660 tcaggccaaa tgaaacagcc ccttcaagca aacatgcctt caatctctcg aggcaggaca 6720 atgattcata ttccaggagt tcgaaatagc tcctcaagta caagtcctgt ttctaaaaaa 6780 6840 ggcccacccc ttaagactcc agcctccaaa agccctagtg aaggtcaaac agccaccact tetectagag gagecaagee atetgtgaaa teagaattaa geeetgttge eaggeagaea 6900 teccaaatag gtgggteaag taaageaeet tetagateag gatetagaga ttegaceeet 6960 tcaagacctg cccagcaacc attaagtaga cctatacagt ctcctggccg aaact aatt 7020 tcccctggta gaaatggaat aagtcctcct aacaaattat ctcaacttcc aaggacatca 7080 tecectagta etgetteaac taagteetea ggttetggaa aaatgteata tacateteea 7140 ggtagacaga tgagccaaca gaaccttacc aaacaaacag gtttatccaa gaatgccayt 7200 agtattccaa gaagtgagtc tgcctccaaa ggactaaatc agatgaataa tggtaatgg 7260 gccaataaaa aggtagaact ttctagaatg tcttcaacta aatcaagtgg aagtgaatch 7320

()

gatagatcag aagacctgt attagtacgc cagtcaactt tcatcaaaga agctccaagc ccaaccttaa gaagaaaatt ggaggaatct gcttcatttg aatctctttc tccatcatct 7440 agaccagett eteccactag gteccaggea caaactecag ttttaagtee ttecetteet 7500 gatatgicte taleccacaca tiegteigt caggetggtg gatggegaaa acteeccacet 7560 aatctcagtc ccactataga gtataatgat ggaagaccag caaagcgcca tgatattgca 7620 cggtctcatt ctgaagtcc ttctagactt ccaatcaata ggtcaggaac ctggaaacgt 7680 gagcacagca aacattcatc atcccttcct cgagtaagca cttggagaag aactggaagt 7740 tcatcttcaa ttcttctgc ttcatcagaa tccagtgaaa aagcaaaaag tgaggatgaa 7800 aaacatgtga actctatttc aggaaccaaa caaagtaaag aaaaccaagt atccgcaaaa 7860 ggaacatgga gaaaaataa agaaaatgaa ttttctccca caaatagtac ttctcagacc 7920 gtttcctcag gtgctacaqa tggtgctgaa tcaaagactc taatttatca aatggcacct 7980 gctgtttcta aaacagagga tgtttgggtg agaattgagg actgtcccat taacaatcct 8040 agatotggaa gatotoccaq aggtaatact coccoggtga ttgacagtgt ttcagaaaag 8100 gcacatccaa acattaaaga ttcaaaagat aatcaggcaa aacaaaatgt gggtaatggc agtgttcca tgcgtaccgt gggtttggaa aatcgcctga cctcctttat tcaggtggat gccctgacc aaaaaggaac gagataaaa ccaggacaaa ataatcctgt ccctgtatca 8160 8220 8280 gagactaatg aaagtcctat agtggaacgt accccattca gttctagcag ctcaagcaaa 8340 cacagttcac ctagtgggac tottgctgcc agagtgactc cttttaatta caacccaagc 8400 cctaggaaaa gcagcgcaga tagcacttca gctcggccat ctcagatccc aactccagtg 8460 aataacaaca caaagaagcg agattccaaa actgacagca cagaatccag tggaacccaa 8520 8580 agtectaage gecattetgg gtettacett gtgacatetg tttaaaagag aggaagaatg aaactaagaa aattctatgt taattacaac tgctatatag acattttgtt tcaaatgaaa 8640 ctttaaaaga ctgaaaaatt ttgtaatag gtttgattct tgttagaggg tttttgttct ggaagccata tttgatagta tactttgtct tcactggtct tattttggga ggcactcttg 8700 8760 atggttagga aaaaatagaa agccaagtat gtttgtacag tatgttttac atgtatttaa 8820 agtagcatcc catcccaact tccttaatta ttgcttgtct aaaataatga acactacaga 8880 taggaaatat gatatattgc tgttatcaat catttctaga ttataaactg actaaactta 8940 catcagggga aaattggtat ttatgcaaaa aaaaaatgtt tttgtccttg tgagtccatc taacatcata attaatcatg tggctgtgaa attcacagta atatggttcc cgatgaacaa gttacccag cctgctttgc ttactgcatg aatgaaactg atggttcaat ttcagaagta 9000 9060 9120 atgattaaca gttatgtggt cacatgatgt gcatagagat agctacagtg taataattta 9180 cactattttg tgctccaaac aaaacaaaaa tctgtgtgtaac tgtaaaacat tgaatgaaac 9240 tattttacct gaactagatt ttatctgaaa gtaggtagaa titttgctat gctgtaattt 9300 gttgtatatt ctggtatttg aggtgagatg gctgctcttt attaatgaga catgaattgt 9360 gtctcaacag aaactaaatg aacatttcag aataattat tgctgtatgt aaactgttac tgaaattggt atttgtttga agggtttgtt tcacatttgt attaattaat tgtttaaaat 9420 9480 gcctctttta aaagcttata taaatttttt cttcagcttc tatgcattaa gagtaaaatt 9540 cetettactg taataaaaac attgaagaag actgttgeca ettaaccatt ceatgegttg 9600 9606

7380

<210> 2 <211> 2843 <212> PRT

gcactt

<213> Homo sapiens

Met Ala Ala Ala Ser Tyr Asp Gln Leu Leu Lys Gln Val\Glu Ala Leu Lys Met Glu Asn Ser Asn Leu Arg Gln Glu Leu Glu Asp Asn Ser Asn His Leu Thr Lys Leu Glu Thr Glu Ala Ser Asn Met Lys Glu Val Leu Lys Gln Leu Gln Gly Ser Ile Glu Asp Glu Ala Met Ala Ser Ser Gly

Gln Ile Asp Leu Leu Glu Arg Leu Lys Glu Leu Asn Leu Asp Ser Ser Asn Phe Pro Gly Val Lys Leu Arg Ser Lys Met Ser Leu Arg Ser Tyr Gly Ser Arg Glu Gly Ser Val Ser Ser Arg Ser Gly Glu Cys Ser Pro Val Pro Met Gly Ser Phe Pro Arg Arg Gly Phe Val Asn Gly Ser Arg Glu Ser Thr Gly Tyr Leu Glu Glu Leu Glu Lys Glu Arg Ser Leu Leu Leu Ala Asp Leu Asp Lys Glu Glu Lys Glu Lys Asp Trp Tyr Tyr Ala Gln Leu Gln Asn Let Thr Lys Arg Ile Asp Ser Leu Pro Leu Thr Glu Asn Phe Ser Leu Gln Thr Asp Leu Thr Arg Arg Gln Leu Glu Tyr Glu Ala Arg Gln Ile Arg Val\Ala Met Glu Glu Gln Leu Gly Thr Cys Gln Asp Met Glu Lys Arg Ala Gln Arg Arg Ile Ala Arg Ile Gln Gln Ile Glu Lys Asp Ile Leu Arg Ile Arg Gln Leu Leu Gln Ser Gln Ala Thr Glu Ala Glu Arg Ser Ser Gln Asn Lys His Glu Thr Gly Ser His Asp Ala Glu Arg Gln Asn Glu Gly Gly Gly Val Gly Glu Ile Asn Met Ala 260 270 Thr Ser Gly Asn Gly Gln Gly Ser Thr Thr Arg Met Asp His Glu Thr Ala Ser Val Leu Ser Ser Ser Ser Thr His Ser Ala Pro Arg Arg Leu Thr Ser His Leu Gly Thr Lys Val Glu Met Val Tyr Ser Leu Leu Ser Met Leu Gly Thr His Asp Lys Asp Asp Met Ser Arg Thr Leu Leu Ala 3/30 Met Ser Ser Ser Gln Asp Ser Cys Ile Ser Met Arg Gln Ser Gly Cys Leu Pro Leu Leu Ile Gln Leu Leu His Gly\Asn Asp Lys Asp Ser Val Leu Leu Gly Asn Ser Arg Gly Ser Lys Glu Ala Arg Ala Arg Ala Ser Ala Ala Leu His Asn Ile Ile His Ser Gln Pr $\lambda$  Asp Asp Lys Arg Gly Arg Arg Glu Ile Arg Val Leu His Leu Leu Glu cun Ile Arg Ala Tyr Cys Glu Thr Cys Trp Glu Trp Gln Glu Ala His Gl\(\frac{1}{2}\) Pro Gly Met Asp Gln Asp Lys Asn Pro Met Pro Ala Pro Val Glu His Aln Ile Cys Pro Ala Val Cys Val Leu Met Lys Leu Ser Phe Asp Glu Glu His Arg His Ala Met Asn Glu Leu Gly Gly Leu Gln Ala Ile Ala Glu Leu Gln Val Asp Cys Glu Met Tyr Gly Leu Thr Asn Asp His Tyr Ser Ile Thr

Leu Arg Arg Tyr Ala Gly Met Ala Leu Thr Asn Leu Thr Phe Gly Asp 505 Val Ala Asn Lys Ala Thr Leu Cys Ser Met Lys Gly Cys Met Arg Ala 520 Leu Val Ala Gln Leu Lys Ser Glu Ser Glu Asp Leu Gln Gln Val Ile 535 Ala Ser Val Leu Arg Asn Leu Ser Trp Arg Ala Asp Val Asn Ser Lys 555 550 Lys Thr Leu Arg Glu Val Gly Ser Val Lys Ala Leu Met Glu Cys Ala 570 565 Leu Glu Val Lys Lys Glu Ser Thr Leu Lys Ser Val Leu Ser Ala Leu 585 Trp Asn Leu Ser Ala His Cys Thr Glu Asn Lys Ala Asp Ile Cys Ala 600 Val Asp Gly Ala Leu Ala Phe Leu Val Gly Thr Leu Thr Tyr Arg Ser 595 620 615 Gln Thr Asn Thr Leu Ala Ile Ile Glu Ser Gly Gly Ile Leu Arg 635 630 Asn Val Ser Ser Leu Ile Ala Thr Asn Glu Asp His Arg Gln Ile Leu 650 Arg Glu Asn Asn Cys Leu Gln Thr Leu Leu Gln His Leu Lys Ser His 645 665 Ser Leu Thr Ile Val Ser Asn Ala Cys Gly Thr Leu Trp Asn Leu Ser 680 Ala Arg Asn Pro Lys Asp Gln Glu Ala Leu Trp Asp Met Gly Ala Val 700 695 Ser Met Leu Lys Asn Leu Ile His Ser Lys His Lys Met Ile Ala Met 715 710 Gly Ser Ala Ala Ala Leu Arg Asn Leu Met Ala Asn Arg Pro Ala Lys 730 725 Tyr Lys Asp Ala Asn Ile Met Ser Pro Gly Ser Ser Leu Pro Ser Leu 745 740 His Val Arg Lys Gln Lys Ala Leu Glu Ala Glu Leu Asp Ala Gln His 760 Leu Ser Glu Thr Phe Asp Asn Ile Asp Asn Leu Ser Pro Lys Ala Ser 780 775 His Arg Ser Lys Gln Arg His Lys Gln Ser Leu Tyr Gly Asp Tyr Val 795 790 Phe Asp Thr Asn Arg His Asp Asp Asn Arg Ser Asp Asn Phe Asn Thr 810 805 Gly Asn Met Thr Val Leu Ser Pro Tyr Leu Asn Thr Thr Val Leu Pro 825 820 Ser Ser Ser Ser Ser Arg Gly Ser Leu Asp Ser Ser Arg Ser Glu Lys 840 Asp Arg Ser Leu Glu Arg Glu Arg Gly Ile Gly Leu Gly Asn Tyr His 835 855 Pro Ala Thr Glu Asn Pro Gly Thr Ser Ser Lys Arg Gly Leu Gln Ile 875 870 Ser Thr Thr Ala Ala Gln Ile Ala Lys Val Met Glu Glu Val Ser Ala 890 885 Ile His Thr Ser Gln Glu Asp Arg Ser Ser Gly Ser Thr Thr Glu Leu 905 His Cys Val Thr Asp Glu Arg Asn Ala Leu Arg Arg Ser Ser Ala Ala 925 920 His Thr His Ser Asn Thr Tyr Asn Phe Thr Lys Ser Glu Asn Ser Asn

d

Arg Thr Cys Ser Met Pro Tyr Ala Lys Leu Glu Tyr Lys Arg Ser Ser Asn Asp Ser Leu Asn Ser Val Ser Ser Asn Asp Gly Tyr Gly Lys Arg Gly Gln Met Lys Pro Ser Ile Glu Ser Tyr Ser Glu Asp Asp Glu Ser Lys Phe Cys Ser Tyr Gly Gln Tyr Pro Ala Asp Leu Ala His Lys Ile His Ser Ala Asn His Met Asp Asp Asn Asp Gly Glu Leu Asp Thr Pro Ile Asn Tyr Ser Leu Lys Tyr Ser Asp Glu Gln Leu Asn Ser Gly Arg Gln Ser Pro Ser Gln Asn Glu Arg Trp Ala Arg Pro Lys His Ile Ile Glu Asp Glu Ile Lys Gln Ser Glu Gln Arg Gln Ser Arg Asn Gln Ser Thr Thr Tyr Pro Val Tyr Thr Glu Ser Thr Asp Asp Lys His Leu Lys Phe Gln Pro His Phe Gly Gln Glu Cys Val Ser Pro Tyr Arg Ser Arg Gly Ala Asn Gly Ser Glu Thr Asn Arg Val Gly Ser Asn His Gly 1105 1110 1115 Ile Asn Gln Asn Val Ser Gln Ser Leu Cys Gln Glu Asp Asp Tyr Glu 1130 1135 Asp Asp Lys Pro Thr Asn Tyr Ser Glu Arg Tyr Ser Glu Glu Gln His Glu Glu Glu Arg Pro Thr Asn Tyr Ser Ile Lys Tyr Asn Glu <sup>-</sup> 1165 Glu Lys Arg His Val Asp Gln Pro Ile Asp Tyr Ser Leu Lys Tyr Ala 1170 1175 1180 Thr Asp Ile Pro Ser Ser Gln Lys Gln Ser Phe Ser Phe Ser Lys Ser Ser Ser Gly Gln Ser Ser Lys Thr Glu His Met Ser Ser Ser Glu Asn Thr Ser Thr Pro Ser Ser Asn Ala Lys Arg Gln Asn Gln Leu His Pro Ser Ser Ala Gln Ser Arg Ser Gly Gln Pro Gln Lys Ala Ala Thr Cys Lys Val Ser Ser Ile Asn Gln Glu Thr Ile Gln Thr Tyr Cys Val Glu Asp Thr Pro Ile Cys Phe Ser Arg Cys Ser Ser Leu Ser Ser Leu 1286 1275 1286 Ser Ser Ala Glu Asp Glu Ile Gly Cys Asn Gln Thr Thr Gln Glu Ala 1285 1290 1295 Asp Ser Ala Asn Thr Leu Gln Ile Ala Glu Ile Lys Gly Lys Ile Gly Thr Arg Ser Ala Glu Asp Pro Val Ser Glu Val Pro Ala Val Ser Gln His Pro Arg Thr Lys Ser Ser Arg Leu Gln Gly Ser Ser Leu Ser Ser Glu Ser Ala Arg His Lys Ala Val Glu Phe Pro Ser Gly Ala Lys Ser

Pro Ser Lys Ser Gly Ala Gln Thr Pro Lys Ser Pro Pro Glu His Tyr

Val Gln Glu Thr Pro Leu Met Phe Ser Arg Cys Thr Ser Val Ser Ser Leu Asp Ser Phe Glu Ser Arg Ser Ile Ala Ser Ser Val Gln Ser Glu Pro Cys Ser Gly Met Val Ser Gly Ile Ile Ser Pro Ser Asp Leu Pro Asp Ser Pro Gly Gln Thr Met Pro Pro Ser Arg Ser Lys Thr Pro Pro Pro Pro Pro Gln Thr Ala Gln Thr Lys Arg Glu Val Pro Lys Asn Lys <sup>-</sup> 1450 1455 Ala Pro Thr Ala Glu Lys Arg Glu Ser Gly Pro Lys Gln Ala Ala Val Asn Ala Ala Val Gln Arg Val Gln Val Leu Pro Asp Ala Asp Thr Leu Leu His Phe Ala Thr Glu Ser Thr Pro Asp Gly Phe Ser Cys Ser Ser Ser Leu Ser Ala Leu Ser Leu Asp Glu Pro Phe Ile Gln Lys Asp Val Glu Leu Arg Ile Met Pro Pro Val Gln Glu Asn Asp Asn Gly Asn Glu Thr Glu Ser Glu Gln Pro Lys Glu Ser Asn Glu Asn Gln Glu Lys Glu Ala Glu Lys Thr Ile Asp Ser Glu Lys Asp Leu Leu Asp Asp Ser Asp Asp Asp Asp Ile Glu Ile Leu Glu Glu Cys Ile Ile Ser Ala Met Pro Thr Lys Ser Ser Arg Lys Gly Lys Lys Pro Ala Gln Thr Ala Ser Lys Leu Pro Pro Pro Val Ala Arg Lys Pro Ser Gln Leu Pro Val Tyr Lys Leu Leu Pro Ser Gln Asn Arg Leu Gln Pro Gln Lys His Val Ser Phe Thr Pro Gly Asp Asp Met Pro Arg Val Tyr Cys Val Glu Gly Thr Pro Ile Asn Phe Ser Thr Ala Thr Ser Leu Ser Asp Leu Thr Ile Glu Ser Pro Pro Asn Glu Leu Ala Ala Gly Glu Gly Val Arg Gly Gly Ala Gln Ser Gly Glu Phe Glu Lys Arg Asp Thr Ile Pro Thr Glu Gly Arg Ser Thr Asp Glu Ala Gln Gly Gly Lys Thr Ser Ser Val Thr Ile Pro Glu Leu Asp Asp Asn Lys Ala Glu Glu Gly Asp Ile Leu Ala Glu Cys Ile Asn Ser Ala Met Pro Lys Gly Lys Ser His Lys Pro Phe Arg Val Lys Lys Ile Met Asp Gln Val Gln Gln Ala Ser Ala Ser Ser Ser Ala Pro Asn Lys Asn Gln Leu Asp Gly Lys Lys Lys Lys Pro Thr Ser Pro Val Lys Pro Ile Pro Gln Asn Thr Glu Tyr Arg Thr Arg Val Arg Lys Asn Ala Asp Ser Lys Asn Asn Leu Asn Ala Glu Arg Val Phe Ser Asp Asn 

Lys Asp Ser Lys Lys Gln Asn Leu Lys Asn Asn Ser Lys Asp Phe Asn

**⊥815** Asp Lys Leu Pro Asn Asn Glu Asp Arg Val Arg Gly Ser Phe Ala Phe Asp Ser Pro His His Tyr Thr Pro Ile Glu Gly Thr Pro Tyr Cys Phe Ser Arg Asn Asp Ser Leu Ser Ser Leu Asp Phe Asp Asp Asp Val Asp Leu Ser Arg Glu Lys Ala Glu Leu Arg Lys Ala Lys Glu Asn Lys Glu Ser Glu Ala Lys Val Thr Ser His Thr Glu Leu Thr Ser Asn Gln 1890 1895 Gln Ser Ala Asn Lys Thr Gln Ala Ile Ala Lys Gln Pro Ile Asn Arg Gly Gln Pro Lys Pro Ile Leu Gln Lys Gln Ser Thr Phe Pro Gln Ser 1925 1930 Ser Lys Asp Ile Pro Asp Arg Gly Ala Ala Thr Asp Glu Lys Leu Gln 1940 1945 Asn Phe Ala Ile Glu Asn Thr Pro Val Cys Phe Ser His Asn Ser Ser Leu Ser Ser Leu Ser Asp Ile Asp Gln Glu Asn Asn Asn Lys Glu Asn Glu Pro Ile Lys Glu Thr Glu Pro Pro Asp Ser Gln Gly Glu Pro Ser Lys Pro Gln Ala Ser Gly Tyr Ala Pro Lys Ser Phe His Val Glu Asp Thr Pro Val Cys Phe Ser Arg Asn Ser Ser Leu Ser Ser Leu Ser Ile Asp Ser Glu Asp Asp Leu Leu Gln Glu Cys Ile Ser Ser Ala Met Pro Lys Lys Lys Pro Ser Arg Leu Lys Gly Asp Asn Glu Lys His Ser Pro Arg Asn Met Gly Gly Ile Leu Gly Glu Asp Leu Thr Leu Asp Leu Lys Asp Ile Gln Arg Pro Asp Ser Glu His Gly Leu Ser Pro Asp Ser Glu Asn Phe Asp Trp Lys Ala Ile Gln Glu Gly Ala Asn Ser Ile Val Ser Ser Leu His Gln Ala Ala Ala Ala Cys Leu Ser Arg Gln Ala Ser Ser Asp Ser Asp Ser Ile Leu Ser Leu Lys Ser Gly Ile Ser Leu Gly Ser Pro Phe His Leu Thr Pro Asp Gln Glu Glu Lys Pro Phe Thr Ser Asn Lys Gly Pro Arg Ile Leu Lys Pro Gly Glu Lys Ser Thr Leu Glu Thr Lys Lys Ile Glu Ser Glu Ser Lys Gly Ile Lys Gly Gly Lys Lys Val Tyr Lys Ser Leu Ile Thr Gly Lys Val Arg Ser Asn Ser Glu Ile Ser Gly Gln Met Lys Gln Pro Leu Gln Ala Asn Met Pro Ser Ile Ser Arg Gly Arg Thr Met Ile His Ile Pro Gly Val Arg Asn Ser Ser Ser Ser Thr Ser Pro Val Ser Lys Lys Gly Pro Pro Leu Lys Thr Pro

Ala Ser Lys Ser Pro Ser Glu Gly Gln Thr Ala Thr Thr Ser Pro Arg 2265 Gly Ala Lys Pro Ser Val Lys Ser Glu Leu Ser Pro Val Ala Arg Gln 2280 Thr Ser Gln Ile Gly Gly Ser Ser Lys Ala Pro Ser Arg Ser Gly Ser 2295 Arg Asp Ser Thr Pro Ser Arg Pro Ala Gln Gln Pro Leu Ser Arg Pro 2315 2310 Ile Gln Ser Pro Gly Arg Asn Ser Ile Ser Pro Gly Arg Asn Gly Ile
2325
2330
2335 Ser Pro Pro Asn Lys Leu Ser Gln Leu Pro Arg Thr Ser Ser Pro Ser 2350 2345 Thr Ala Ser Thr Lys Ser Ser Gly Ser Gly Lys Met Ser Tyr Thr Ser 2365 2360 Pro Gly Arg Gln Met Ser Gln Gln Asn Leu Thr Lys Gln Thr Gly Leu 2380 2375 Ser Lys Asn Ala Ser Ser Ile Pro Arg Ser Glu Ser Ala Ser Lys Gly 2395 2390 Leu Asn Gln Met Asn Asn Gly Asn Gly Ala Asn Lys Lys Val Glu Leu 2410 2405 Ser Arg Met Ser Ser Thr Lys Ser Ser Gly Ser Glu Ser Asp Arg Ser 2430 2425 2420 Glu Arg Pro Val Leu Val Arg Gln Ser Thr Phe Ile Lys Glu Ala Pro 2445 2440 2435 Ser Pro Thr Leu Arg Arg Lys Leu Glu Glu Ser Ala Ser Phe Glu Ser 2455 Leu Ser Pro Ser Ser Arg Pro Ala Ser Pro Thr Arg Ser Gln Ala Gln 2450 2475 2470 Thr Pro Val Leu Ser Pro Ser Leu Pro Asp Met Ser Leu Ser Thr His 2485 2490 Ser Ser Val Gln Ala Gly Gly Trp Arg Lys Leu Pro Pro Asn Leu Ser 2500 2505 Pro Thr Ile Glu Tyr Asn Asp Gly Arg Pro Ala Lys Arg His Asp Ile 2520 Ala Arg Ser His Ser Glu Ser Pro Ser Arg Leu Pro Ile Asn Arg Ser 2540 2535 Gly Thr Trp Lys Arg Glu His Ser Lys His Ser Ser Ser Leu Pro Arg 2555 Val Ser Thr Trp Arg Arg Thr Gly Ser Ser Ser Ser Ile Leu Ser Ala 2550 2570 2565 Ser Ser Glu Ser Ser Glu Lys Ala Lys Ser Glu Asp Glu Lys His Val 2585 2590 Asn Ser Ile Ser Gly Thr Lys Gln Ser Lys Glu Asn Gln Val Ser Ala 2595 2600 Lys Gly Thr Trp Arg Lys Ile Lys Glu Asn Glu Phe Ser Pro Thr Asn 2615 Ser Thr Ser Gln Thr Val Ser Ser Gly Ala Thr Asn Gly Ala Glu Ser 2635 Lys Thr Leu Ile Tyr Gln Met Ala Pro Ala Val Ser Lys Thr Glu Asp 2630 2650 Val Trp Val Arg Ile Glu Asp Cys Pro Ile Asn Asn Pro Arg Ser Gly 2670 2665 Arg Ser Pro Thr Gly Asn Thr Pro Pro Val Ile Asp Ser Val Ser Glu 2680 Lys Ala Asn Pro Asn Ile Lys Asp Ser Lys Asp Asn Gln Ala Lys Gln

```
2700
                        ∠095
Asn Val Gly Asn Gly Ser Val Pro Met Arg Thr Val Gly Leu Glu Asn
                                                            2720
                                        2715
                    2710
Arg Leu Thr Ser Phe Ile Gln Val Asp Ala Pro Asp Gln Lys Gly Thr
                                    2730
Glu Ile Lys Pro Gly Gln Asn Asn Pro Val Pro Val Ser Glu Thr Asn
                                2745
Glu Ser Pro Ile Val Glu Arg Thr Pro Phe Ser Ser Ser Ser Ser
                                                2765
                            2760
Lys His Ser Ser Pro Ser Gly Thr Val Ala Ala Arg Val Thr Pro Phe
                        2775
Asn Tyr Asn Pro Ser Pro Arg Lys Ser Ser Ala Asp Ser Thr Ser Ala
                                                             2800
                                        2795
                    2790
Arg Pro Ser Gln Ile Pro Thr Pro Val Asn Asn Asn Thr Lys Lys Arg
                                    2810
Asp Ser Lys Thr Asp Ser Thr Glu Ser Ser Gly Thr Gln Ser Pro Lys
                2805
                                 2825
            2820
Arg His Ser Gly Ser Tyr Leu Val Thr Ser Val
                             2840
<210> 3
<211> 3172
 <212> DNA
 <213> Homo sapiens
 <220>
 <221> misc_feature
 <222> (1)...(3172)
 <223> n = A,T,C \text{ or } G
 gcagtcgccg ctccagtcta tccggcacta ggaacagccc cgggnggcga gacggtcccc
 gccatgtctg cggccatgag ggagaggttc gaccggttcc tgcacgagaa gaactgcatg
 actgacette tggccaaget cgaggccaaa accggcgtga acaggagett catcgetett
 ggtgtcatcg gactggtggc cttgtacctg gtgttcggtt atggagcctc tctcctctgc
 aacctgatag gatttggcta cccagcctac atctcaatta aagctataga gagtcccaac
 aaagaagatg atacccagtg gctgacctac tgggtagtgt atggtgtgtt cagcattgct
 gaattettet etgatatett eetgteatgg tteeeettet actacatget gaagtgtgge
 ttcctgttgt ggtgcatggc cccgagccct tctaatgggg ctgaactgct ctacaagcgc
 atcatccgtc ctttcttcct gaagcacgag tcccagatgg acagtgtggt caaggacctt
 aaagacaagt ccaaagagac tgcagatgcc atcactaaag aagcgaagaa agctaccgtg
 aatttactgg gtgaagaaaa gaagagcacc taaaccagac taaaccagac tggatggaaa
 cttcctgccc tctctgtacc ttcctactgg agcttgatgt tatattaggg actgtggtat
 aattatttta ataatgttgc cttggaaaca tttttgagat attaaagatt ggaatgtgtt
 gtaagtttct ttgcttactt ttactgtcta tatatatagg gagcacttta aacttaatgc
 agtgggcagt gtccacgttt ttggaaaatg tattttgcct ctgggtagga aaagatgtat
 gttgctatcc tgcaggaaat ataaacttaa aataaaatta tataccccac aggctgtgta
```

ctttactggg ctctccctgc acgsattttc tctgtagtta catttaggrt aatctttatg

gttctacttc ctrtaatgta caattttata taattcngra atgttttaa tgtatttgtg

cacatgtaca tatggaaatg ttactgtctg actacancat gcatcatgct catggggagg

gagcagggga aggttgtatg tgtcatttat aacttetgta cagtaagacc acctgccaaa

agctggagga accattgtgc tggtgtggtc tactaaataa tactttagga aatacgtgat

taatatgcaa gtgaacaaag tgagaaatga aatcgaatgg agattggcct ggttgtttcc

gtagtatatg gcatatgaat accaggatag ctttataaag cagttagtta gttagttact

60

120

180

240

300

360

420

480

540

600

660

720

780

840

900

960

1020

1080

1140

1200

1260

1320

acacacaca acacacag agtaccctgt aactctcaat tccctgaaaa actagtaata 1500 ctgtcttatc tgctataaac titacatatt tgtctattgt caagaigcta cantggamnc 1560 cattlctggt titatcttca nagsggagan acatgttgat ttagtcttct ttcccaatct 1620 tetttttaa mecagtttna ggmnettetg ragatttgye cacetetgat tacatgtatg 1680 ttctygtttg tatcatkagc aacaacatgc taatgrcgac acctagctct ragmgcaatt 1740 ctgggagant garaggnwgt ataragtmnc ccataatctg cttggcaata gttaagtcaa 1800 tctatcttca gtttttctct ggcctttaag gtcaaacaca agaggcttcc ctagtttaca 1860 agtcagagtc acttgtagtc catttaaatg ccctcatccg tattctttgt gttgataagc 1920 tgcacakgac tacatagtaa gtacaganca gtaaagttaa nncggatgtc tccattgatc 1980 tgccaantcg ntatagagag caatttgtct ggactagaaa atctgagttt tacaccatac 2040 2100 tgttaagagt ccttttgaat taaactagac taaaacaagt gtataactaa actaacaaga ttaaatatcc agccagtaca gtattttta aggcaaataa agatgattag ctcaccttga 2160 gntaacaatc aggtaagatc atnacaatgt ctcatgatgt naanaatatt aaagatatca 2220 atactaagtg acagtatcac nnctaatata atatggatca gagcafttat tttggggagg 2280 aaaacagtgg tgattaccgg cattttatta aacttaaaac tttgtagaaa gcaaacaaaa 2340 ttgttcttgg gagaaaatca acttttagat taaaaaaatt ttaagtawct aggagtattt 2400 2460 aaatcctttt cccataaata aaagtacagt tttcttggtg gcagaatgaa aatcagcaac ntctagcata tagactatat aatcagattg acagcatata gaatatatta tcagacaaga 2520 tgaggaggta caaaagttac tattgctcat aatgacttac aggctaaaan tagntntaaa 2580 atactatatt aaattotgaa tgcaattttt ttttgttccc ttgagaccaa aatttaagtt 2640 aactgttgct ggcagtctaa gtgtaaatgt taacagcagg agaagttaag aattgagcag 2700 ttctgttgca tgatttccca aatgaaatac tgccttggct agagtttgaa aaactaattg 2760 agcctgtgcc tggctagaaa acaagcgttt atttgaatgt gaatagtgtt tcaaaggtat 2820 gtagttacag aattcctacc aaacagctta aattcttcaa gaaagaattc ctgcagcagt 2880 tattccctta cctgaaggct tcaatcattt ggatcaacaa ctgctactct cgggaagact 2940 cctctactca cagctgaaga aaatgagcac acccttcaca ctgttatcac ctatcctgaa 3000 gatgtgatac actgaatgga aataaataga tgtaaataaa attgagwtct catttaaaaa 3060 aaaccatgtg cccaatggga aaatgacctc atgttgtggt ttaaacagca actgcaccca 3120 3172 ctagcacage ccattgaget ancetatata tacatetetg teagtgeece te

4

<210> 4 <211> 210 <212> PRT

<213> Homo sapiens

 Ala Val
 Ala Ala
 Pro Val
 Tyr
 Pro Ala
 Leu Gly
 Thr
 Ala
 Pro Gly
 Gly
 Gly
 Gly
 Thr
 Ala
 Pro Gly
 Gly
 Gly
 Gly
 Thr
 Ala
 Pro Gly
 Gly
 Arg
 Phe
 Asp
 Arg
 Ala
 Met
 Ala
 Met
 Arg
 Gly
 Arg
 Phe
 Asp
 Arg
 Arg
 Gly
 Arg
 Phe
 Asp
 Arg
 Ala
 Met
 Thr
 Asp
 Leu Leu Leu Ala
 Lys
 Leu Gly
 Ala
 Lys
 Arg
 Arg
 Ala
 Leu Leu Gly
 Val
 Ile Gly
 Ala
 Ala
 Lys
 Ala
 Lys
 Ile Gly
 Ala
 Ile Gly
 Ala
 Ile Gly
 Ala
 Ile Gly
 Ile Gly
 Ala
 Ile Gly
 Ala
 Ile Gly
 Ile Gly
 Ile Gly
 Ala
 Ile Gly
 Ala

155 Ile Ile Arg Pro Phe Phe Leu Lys His Glu Ser Gln Met Asp Ser Val Val Lys Asp Leu Lys Asp Lys Ser Lys Glu Thr Ala Asp Ala Ile Thr 185 Lys Glu Ala Lys Lys Ala Thr Val Asn Leu Leu Gly Glu Glu Lys Lys 200 195 Ser Thr 210 <210> 5 <211> 434 <212> PRT <213> Homo sapiens Val Ala Pro Val Val Val Gly Ser Gly Arg Ala Pro Arg His Pro Ala Pro Ala Ala Met His Pro Arg Arg Pro Asp Gly Phe Asp Gly Leu Gly Tyr Arg Gly Gly Ala Arg Asp Glu Gln Gly Phe Gly Gly Ala Phe Pro 40 Ala Arg Ser Phe Ser Thr Gly Ser Asp Leu Gly His Trp Val Thr Thr Pro Pro Asp Ile Pro Gly Ser Arg Asn Leu His Trp Gly Glu Lys Ser Pro Pro Tyr Gly Val Pro Thr Thr Ser Thr Pro Tyr Glu Gly Pro Thr Glu Glu Pro Phe Ser Ser Gly Gly Gly Gly Ser Val Gln Gly Gln Ser 105 Ser Glu Gln Leu Asn Arg Phe Ala Gly Phe Gly Ile Gly Leu Ala Ser 120 Leu Phe Thr Glu Asn Val Leu Ala His Pro Cys Ile Val Leu Arg Arg 135 Gln Cys Gln Val Asn Tyr His Ala Gln His Tyr His Leu Thr Pro Phe 150

H

 Pro
 Pro
 Asp
 Ile
 Pro
 Gly
 Ser
 Arg
 Asn
 Leu
 His
 Trp
 Glu
 Glu
 Lys
 Ser
 R0

 Pro
 Pro
 Tyr
 Gly
 Val
 Pro
 Thr
 Thr
 Pro
 Tyr
 Glu
 Gly
 Pro
 Tyr
 Glu
 Gly
 Pro
 Tyr
 Glu
 Gly
 Pro
 Tyr
 Fyr
 Pro
 Pro

315 310 305 Ser Thr Ser Pro Val Gln Ser Met Leu Asp Ala Tyr Phe Pro Glu Leu 330 325 Ile Ala Asn Phe Ala Ala Ser Leu Cys Ser Asp Val Ile Leu Tyr Pro 345 Leu Glu Thr Val Leu His Arg Leu His Ile Gln Gly Thr Arg Thr Ile 365 360 Ile Asp Asn Thr Asp Leu Gly Tyr Glu Val Leu Pro Ile Asn Thr Gln 380 375 Tyr Glu Gly Met Arg Asp Cys Ile Asn Thr Ile Arg Gln Glu Gly 395 390 Val Phe Gly Phe Tyr Lys Gly Phe Gly Ala Val Ile Ile Gln Tyr Thr 410 405 Leu His Ala Ala Val Leu Gln Ile Thr Lys Ile Ile Tyr Ser Thr Leu 430 Leu Gln

<210> 6 <211> 185 <212> PRT <213> Homo sapiens

<400> 6 Glu Leu Arg Arg Phe Asp Arg Phe Leu His Glu Lys Asn Cys Met Thr 10 Asp Leu Leu Ala Lys Leu Glu Ala Lys Thr Gly Val Asn Arg Ser Phe 2.5 Ile Ala Leu Gly Val Ile Gly Leu Val Ala Leu Tyr Leu Val Phe Gly 2.0 40 Tyr Gly Ala Ser Leu Leu Cys Asn Leu Ile Gly Phe Gly Tyr Pro Ala 55 50 Tyr Ile Ser Ile Lys Ala Ile Glu Ser Pro Asn Lys Glu Asp Asp Thr 75 70 Gln Trp Leu Thr Tyr Trp Val Val Tyr Gly Val Phe Ser Ile Ala Glu 90 85 Phe Phe Ser Asp Ile Phe Leu Ser Trp Phe Pro Phe Tyr Tyr Ile Leu 105 Lys Cys Gly Phe Leu Leu Trp Cys Met Ala Pro Ser Pro Ser Asn Gly 100 125 120 115 Ala Glu Leu Leu Tyr Lys Arg Ile Ile Arg Pro Phe Phe Leu Lys His 140 135 130 Glu Ser Gln Met Asp Ser Val Val Lys Asp Leu Lys Asp Lys Ala Lys 155 150 Glu Thr Ala Asp Ala Ile Thr Lys Glu Ala Lys Lys Ala Thr Val Asn 170 165 Leu Leu Gly Glu Glu Lys Lys Ser Thr

<210> 7 <211> 2842 <212> PRT <213> Homo sapiens

<400> 7

Met Ala Ala Ala Ser Tyr Asp Gln Leu Leu Lys Gln Val Glu Ala Leu Lys Met Glu Asn Ser Asn Leu Arg Gln Glu Leu Glu Asp Asn Ser Asn 2.5 His Leu Thr Lys Leu Glu Thr Glu Ala Ser Asn Met Lys Glu Val Leu Lys Gln Leu Gln Gly Ser Ile Glu Asp Glu Ala Met Ala Ser Ser Gly Gln Ile Asp Leu Leu Glu Arg Leu Lys Glu Leu Asn Leu Asp Ser Ser Asn Phe Pro Gly Val Lys Leu Arg Ser Lys Met Ser Leu Arg Ser Tyr Gly Ser Arg Glu Gly Ser Val Ser Ser Arg Ser Gly Glu Cys Ser Pro Val Pro Met Gly Ser Phe Pro Arg Arg Gly Phe Val Asn Gly Ser Arg Glu Ser Thr Gly Tyr Leu Glu Glu Leu Glu Lys Glu Arg Ser Leu Leu Leu Ala Asp Leu Asp Lys Glu Glu Lys Glu Lys Asp Trp Tyr Tyr Ala Gln Leu Gln Asn Leu Thr Lys Arg Ile Asp Ser Leu Pro Thr Glu Asn Phe Ser Leu Gln Thr Asp Met Thr Arg Arg Gln Leu Glu Tyr Glu Ala Arg Gln Ile Arg Val Ala Met Glu Glu Gln Leu Gly Thr Cys Gln Asp Met Glu Lys Arg Ala Gln Arg Arg Ile Ala Arg Ile Gln Gln Ile Glu Lys Asp Ile Leu Arg Ile Arg Gln Leu Leu Gln Ser Gln Ala Thr Glu Ala Glu Arg Ser Ser Gln Asn Lys His Glu Thr Gly Ser His Asp Ala Glu Arg Gln Asn Glu Gly Gln Gly Val Gly Glu Ile Asn Met Ala Thr Ser Gly Asn Gly Gln Gly Ser Thr Thr Arg Met Asp His Glu Thr Ala Ser Val Leu Ser Ser Ser Ser Thr His Ser Ala Pro Arg Arg Leu Thr Ser His Leu Gly Thr Lys Val Glu Met Val Tyr Ser Leu Leu Ser Met Leu Gly Thr His Asp Lys Asp Asp Met Ser Arg Thr Leu Leu Ala Met Ser Ser Ser Gln Asp Ser Cys Ile Ser Met Arg Gln Ser Gly Cys Leu Pro Leu Leu Ile Gln Leu Leu His Gly Asn Asp Lys Asp Ser Val Leu Leu Gly Asn Ser Arg Gly Ser Lys Glu Ala Arg Ala Arg Ala Ser Ala Ala Leu His Asn Ile Ile His Ser Gln Pro Asp Asp Lys Arg Gly Arg Arg Glu Ile Arg Val Leu His Leu Leu Glu Gln Ile Arg Ala Tyr Cys Glu Thr Cys Trp Glu Trp Gln Glu Ala His Glu Pro Gly Met Asp Gln Asp Lys Asn Pro Met Pro Ala Pro Val Glu His Gln Ile Cys Pro Ala

Val Cys Val Leu Met Lys Leu Ser Phe Asp Glu Glu His Arg His Ala Met Asn Glu Leu Gly Gly Leu Gln Ala Ile Ala Glu Leu Leu Gln Val Asp Cys Glu Met Tyr Gly Leu Thr Asn Asp His Tyr Ser Ile Thr Leu Arg Arg Tyr Ala Gly Met Ala Leu Thr Asn Leu Thr Phe Gly Asp Val Ala Asn Lys Ala Thr Leu Cys Ser Met Lys Gly Cys Met Arg Ala Leu Val Ala Gln Leu Lys Ser Glu Ser Glu Asp Leu Gln Gln Val Ile Ala Ser Val Leu Arg Asn Leu Ser Trp Arg Ala Asp Val Asn Ser Lys Lys Thr Leu Arg Glu Val Gly Ser Val Lys Ala Leu Met Glu Cys Ala Leu Glu Val Lys Lys Glu Ser Thr Leu Lys Ser Val Leu Ser Ala Leu Trp Asn Leu Ser Ala His Cys Thr Glu Asn Lys Ala Asp Ile Cys Ala Val Asp Gly Ala Leu Ala Phe Leu Val Gly Thr Leu Thr Tyr Arg Ser Gln Thr Asn Thr Leu Ala Ile Ile Glu Ser Gly Gly Gly Ile Leu Arg Asn Val Ser Ser Leu Ile Ala Thr Asn Glu Asp His Arg Gln Ile Leu Arg Glu Asn Asn Cys Leu Gln Thr Leu Leu Gln His Leu Lys Ser His Ser Leu Thr Ile Val Ser Asn Ala Cys Gly Thr Leu Trp Asn Leu Ser Ala Arg Asn Pro Lys Asp Gln Glu Ala Leu Trp Asp Met Gly Ala Val Ser Met Leu Lys Asn Leu Ile His Ser Lys His Lys Met Ile Ala Met Gly Ser Ala Ala Leu Arg Asn Leu Met Ala Asn Arg Pro Ala Lys Tyr Lys Asp Ala Asn Ile Met Ser Pro Gly Ser Ser Leu Pro Ser Leu His Val Arg Lys Gln Lys Ala Leu Glu Ala Glu Leu Asp Ala Gln His Leu Ser Glu Thr Phe Asp Asn Ile Asp Asn Leu Ser Pro Lys Ala Ser His Arg Ser Lys Gln Arg His Lys Gln Ser Leu Tyr Gly Asp Tyr Val Phe Asp Thr Asn Arg His Asp Asp Asn Arg Ser Asp Asn Phe Asn Thr Gly Asn Met Thr Val Leu Ser Pro Tyr Leu Asn Thr Thr Val Leu Pro Ser Ser Ser Ser Ser Arg Gly Ser Leu Asp Ser Ser Arg Ser Glu Lys Asp Arg Ser Leu Glu Arg Glu Arg Gly Ile Gly Leu Gly Asn Tyr His Pro Ala Thr Glu Asn Pro Gly Thr Ser Ser Lys Arg Gly Leu Gln Ile Ser

Thr Thr Ala Ala Gln Ile Ala Lys Val Met Glu Glu Val Ser Ala Ile His Thr Ser Gln Glu Asp Arg Ser Ser Gly Ser Thr Thr Glu Leu His Cys Val Thr Asp Glu Arg Asn Ala Leu Arg Arg Ser Ser Ala Ala His Thr His Ser Asn Thr Tyr Asn Phe Thr Lys Ser Glu Asn Ser Asn Arg Thr Cys Ser Met Pro Tyr Ala Lys Leu Glu Tyr Lys Arg Ser Ser Asn Asp Ser Leu Asn Ser Val Ser Ser Ser Asp Gly Tyr Gly Lys Arg Gly Gln Met Lys Pro Ser Ile Glu Ser Tyr Ser Glu Asp Asp Glu Ser Lys Phe Cys Ser Tyr Gly Gln Tyr Pro Ala Asp Leu Ala His Lys Ile His Ser Ala Asn His Met Asp Asp Asn Asp Gly Glu Leu Asp Thr Pro Ile Asn Tyr Ser Leu Lys Tyr Ser Asp Glu Gln Leu Asn Ser Gly Arg Gln Ser Pro Ser Gln Asn Glu Arg Trp Ala Arg Pro Lys His Ile Ile Glu Asp Glu Ile Lys Gln Ser Glu Gln Arg Gln Ser Arg Asn Gln Ser Thr Thr Tyr Pro Val Tyr Thr Glu Ser Thr Asp Asp Lys His Leu Lys Phe Gln Pro His Phe Gly Gln Gln Glu Cys Val Ser Pro Tyr Arg Ser Arg Gly Ala Asn Gly Ser Glu Thr Asn Arg Val Gly Ser Asn His Gly Ile Asn Gln Asn Val Ser Gln Ser Leu Cys Gln Glu Asp Asp Tyr Glu Asp Asp Lys Pro Thr Asn Tyr Ser Glu Arg Tyr Ser Glu Glu Gln His Glu Glu Glu Glu Arg Pro Thr Asn Tyr Ser Ile Lys Tyr Asn Glu Glu Lys Arg His Val Asp Gln Pro Ile Asp Tyr Ser Leu Lys Tyr Ala Thr Asp Ile Pro Ser Ser Gln Lys Gln Ser Phe Ser Phe Ser Lys Ser Ser Ser Gly Gln Ser Ser Lys Thr Glu His Met Ser Ser Ser Ser Glu Asn Thr Ser Thr Pro Ser Ser Asn Ala Lys Arg Gln Asn Gln Leu His Pro Ser Ser Ala Gln Ser Arg Ser Gly Gln Pro Gln Lys Ala Ala Thr Cys Lys Val Ser Ser Ile Asn Gln Glu Thr Ile Gln Thr Tyr Cys Val Glu Asp Thr Pro Ile Cys Phe Ser Arg Cys Ser Ser Leu Ser Ser Leu Ser Ser Ala Glu Asp Glu Ile Gly Cys Asn Gln Thr Thr Gln Glu Ala Asp Ser Ala Asn Thr Leu Gln Ile Ala Glu Ile Lys Glu Lys Ile Gly Thr



Arg Ser Ala Glu Asp Pro Val Ser Glu Val Pro Ala Val Ser Gln His

Pro Arg Thr Lys Ser Ser Arg Leu Gln Gly Ser Ser Leu Ser Ser Glu Ser Ala Arg His Lys Ala Val Glu Phe Ser Ser Gly Ala Lys Ser Pro Ser Lys Ser Gly Ala Gln Thr Pro Lys Ser Pro Pro Glu His Tyr Val Gln Glu Thr Pro Leu Met Phe Ser Arg Cys Thr Ser Val Ser Ser Leu Asp Ser Phe Glu Ser Arg Ser Ile Ala Ser Ser Val Gln Ser Glu Pro 1395 1400 Cys Ser Gly Met Val Ser Gly Ile Ile Ser Pro Ser Asp Leu Pro Asp Ser Pro Gly Gln Thr Met Pro Pro Ser Arg Ser Lys Thr Pro Pro Pro Pro Pro Gln Thr Ala Gln Thr Lys Arg Glu Val Pro Lys Asn Lys Ala Pro Thr Ala Glu Lys Arg Glu Ser Gly Pro Lys Gln Ala Ala Val Asn Ala Ala Val Gln Arg Val Gln Val Leu Pro Asp Ala Asp Thr Leu Leu His Phe Ala Thr Glu Ser Thr Pro Asp Gly Phe Ser Cys Ser Ser Ser Leu Ser Ala Leu Ser Leu Asp Glu Pro Phe Ile Gln Lys Asp Val Glu Leu Arg Ile Met Pro Pro Val Gln Glu Asn Asp Asn Gly Asn Glu Thr Glu Ser Glu Gln Pro Lys Glu Ser Asn Glu Asn Gln Glu Lys Glu Ala 1540 1545 1550 Glu Lys Thr Ile Asp Ser Glu Lys Asp Leu Leu Asp Asp Ser Asp Asp 1555 1560 1565 Asp Asp Ile Glu Ile Leu Glu Glu Cys Ile Ile Ser Ala Met Pro Thr Lys Ser Ser Arg Lys Ala Lys Lys Pro Ala Gln Thr Ala Ser Lys Leu Pro Pro Pro Val Ala Arg Lys Pro Ser Gln Leu Pro Val Tyr Lys Leu Leu Pro Ser Gln Asn Arg Leu Gln Pro Gln Lys His Val Ser Phe Thr Pro Gly Asp Asp Met Pro Arg Val Tyr Cys Val Glu Gly Thr Pro Ile Asn Phe Ser Thr Ala Thr Ser Leu Ser Asp Leu Thr Ile Glu Ser Pro Pro Asn Glu Leu Ala Ala Gly Glu Gly Val Arg Gly Gly Ala Gln Ser Gly Glu Phe Glu Lys Arg Asp Thr Ile Pro Thr Glu Gly Arg Ser Thr Asp Glu Ala Gln Gly Gly Lys Thr Ser Ser Val Thr Ile Pro Glu Leu Asp Asp Asn Lys Ala Glu Glu Gly Asp Ile Leu Ala Glu Cys Ile Asn Ser Ala Met Pro Lys Gly Lys Ser His Lys Pro Phe Arg Val Lys Lys Ile Met Asp Gln Val Gln Gln Ala Ser Ala Ser Ser Ser Ala Pro Asn 

Lys Asn Gln Leu Asp Gly Lys Lys Lys Pro Thr Ser Pro Val Lys Pro Ile Pro Gln Asn Thr Glu Tyr Arg Thr Arg Val Arg Lys Asn Ala Asp Ser Lys Asn Asn Leu Asn Ala Glu Arg Val Phe Ser Asp Asn Lys Asp Ser Lys Lys Gln Asn Leu Lys Asn Asn Ser Lys Asp Phe Asn Asp Lys Leu Pro Asn Asn Glu Asp Arg Val Arg Gly Ser Phe Ala Phe Asp Ser Pro His His Tyr Thr Pro Ile Glu Gly Thr Pro Tyr Cys Phe Ser Arg Asn Asp Ser Leu Ser Ser Leu Asp Phe Asp Asp Asp Val Asp 1865 1870 Leu Ser Arg Glu Lys Ala Glu Leu Arg Lys Ala Lys Glu Asn Lys Glu 1875 1880 Ser Glu Ala Lys Val Thr Ser His Thr Glu Leu Thr Ser Asn Gln Gln 1890 1895 Ser Ala Asn Lys Thr Gln Ala Ile Ala Lys Gln Pro Ile Asn Arg Gly Gln Pro Lys Pro Ile Leu Gln Lys Gln Ser Thr Phe Pro Gln Ser Ser Lys Asp Ile Pro Asp Arg Gly Ala Ala Thr Asp Glu Lys Leu Gln Asn Phe Ala Ile Glu Asn Thr Pro Val Cys Phe Ser His Asn Ser Ser Leu Ser Ser Leu Ser Asp Ile Asp Gln Glu Asn Asn Asn Lys Glu Asn Glu Pro Ile Lys Glu Thr Glu Pro Pro Asp Ser Gln Gly Glu Pro Ser Lys 1990 1995 Pro Gln Ala Ser Gly Tyr Ala Pro Lys Ser Phe His Val Glu Asp Thr 2005 2010 Pro Val Cys Phe Ser Arg Asn Ser Ser Leu Ser Ser Leu Ser Ile Asp Ser Glu Asp Asp Leu Leu Gln Glu Cys Ile Ser Ser Ala Met Pro Lys Lys Lys Lys Pro Ser Arg Leu Lys Gly Asp Asn Glu Lys His Ser Pro Arg Asn Met Gly Gly Ile Leu Gly Glu Asp Leu Thr Leu Asp Leu Lys Asp Ile Gln Arg Pro Asp Ser Glu His Gly Leu Ser Pro Asp Ser Glu Asn Phe Asp Trp Lys Ala Ile Gln Glu Gly Ala Asn Ser Ile Val Ser 2105 2110 Ser Leu His Gln Ala Ala Ala Ala Cys Leu Ser Arg Gln Ala Ser Ser Asp Ser Asp Ser Ile Leu Ser Leu Lys Ser Gly Ile Ser Leu Gly Ser Pro Phe His Leu Thr Pro Asp Gln Glu Glu Lys Pro Phe Thr Ser Asn Lys Gly Pro Arg Ile Leu Lys Pro Gly Glu Lys Ser Thr Leu Glu 

Thr Lys Lys Ile Glu Ser Glu Ser Lys Gly Ile Lys Gly Gly Lys Lys

Val Tyr Lys Ser Leu Ile Thr Gly Lys Val Arg Ser Asn Ser Glu Ile

Ser Gly Gln Met Lys Gln Pro Leu Gln Ala Asn Met Pro Ser Ile Ser Arg Gly Arg Thr Met Ile His Ile Pro Gly Val Arg Asn Ser Ser Ser Ser Thr Ser Pro Val Ser Lys Lys Gly Pro Pro Leu Lys Thr Pro Ala Ser Lys Ser Pro Ser Glu Gly Gln Thr Ala Thr Thr Ser Pro Arg Gly Ala Lys Pro Ser Val Lys Ser Glu Leu Ser Pro Val Ala Arg Gln Thr Ser Gln Ile Gly Gly Ser Ser Lys Ala Pro Ser Arg Ser Gly Ser Arg Asp Ser Thr Pro Ser Arg Pro Ala Gln Gln Pro Leu Ser Arg Pro Ile Gln Ser Pro Gly Arg Asn Ser Ile Ser Pro Gly Arg Asn Gly Ile Ser Pro Pro Asn Lys Leu Ser Gln Leu Pro Arg Thr Ser Ser Pro Ser Thr Ala Ser Thr Lys Ser Ser Gly Ser Gly Lys Met Ser Tyr Thr Ser Pro Gly Arg Gln Met Ser Gln Gln Asn Leu Thr Lys Gln Thr Gly Leu Ser Lys Asn Ala Ser Ser Ile Pro Arg Ser Glu Ser Ala Ser Lys Gly Leu Asn Gln Met Asn Asn Gly Asn Gly Ala Asn Lys Lys Val Glu Leu Ser Arg Met Ser Ser Thr Lys Ser Ser Gly Ser Glu Ser Asp Arg Ser Glu 2420 2425 2430

Arg Pro Val Leu Val Arg Gln Ser Thr Phe Ile Lys Glu Ala Pro Ser 2435 2440 Pro Thr Leu Arg Arg Lys Leu Glu Glu Ser Ala Ser Phe Glu Ser Leu Ser Pro Ser Ser Arg Pro Ala Ser Pro Thr Arg Ser Gln Ala Gln Thr Pro Val Leu Ser Pro Ser Leu Pro Asp Met Ser Leu Ser Thr His Ser Ser Val Gln Ala Gly Gly Trp Arg Lys Leu Pro Pro Asn Leu Ser Pro Thr Ile Glu Tyr Asn Asp Gly Arg Pro Ala Lys Arg His Asp Ile Ala Arg Ser His Ser Glu Ser Pro Ser Arg Leu Pro Ile Asn Arg Ser Gly Thr Trp Lys Arg Glu His Ser Lys His Ser Ser Ser Leu Pro Arg Val Ser Thr Trp Arg Arg Thr Gly Ser Ser Ser Ser Ile Leu Ser Ala Ser Ser Glu Ser Ser Glu Lys Ala Lys Ser Glu Asp Glu Lys His Val Asn Ser Ile Ser Gly Thr Lys Gln Ser Lys Glu Asn Gln Val Ser Ala Lys Gly Thr Trp Arg Lys Ile Lys Glu Asn Glu Phe Ser Pro Thr Asn Ser Thr Ser Gln Thr Val Ser Ser Gly Ala Thr Asn Gly Ala Glu Ser Lys 

- 20 **-**

Thr Leu Ile Tyr Gln Met Ala Pro Ala Val Ser Lys Thr Glu Asp Val 2650 Trp Val Arg Ile Glu Asp Cys Pro Ile Asn Asn Pro Arg Ser Gly Arg 2665 2660 Ser Pro Thr Gly Asn Thr Pro Pro Val Ile Asp Ser Val Ser Glu Lys 2685 2680 Ala Asn Pro Asn Ile Lys Asp Ser Lys Asp Asn Gln Ala Lys Gln Asn 2675 2695 2700 Val Gly Asn Gly Ser Val Pro Met Arg Thr Val Gly Leu Glu Asn Arg 2715 2710 Leu Asn Ser Phe Ile Gln Val Asp Ala Pro Asp Gln Lys Gly Thr Glu 2730 Ile Lys Pro Gly Gln Asn Asn Pro Val Pro Val Ser Glu Thr Asn Glu 2745 2750 2740 Ser Ser Ile Val Glu Arg Thr Pro Phe Ser Ser Ser Ser Ser Lys 2765 2760 His Ser Ser Pro Ser Gly Thr Val Ala Ala Arg Val Thr Pro Phe Asn 2780 2770 2775 Tyr Asn Pro Ser Pro Arg Lys Ser Ser Ala Asp Ser Thr Ser Ala Arg 2790 Pro Ser Gln Ile Pro Thr Pro Val Asn Asn Asn Thr Lys Lys Arg Asp 2810 2805 Ser Lys Thr Asp Ser Thr Glu Ser Ser Gly Thr Gln Ser Pro Lys Arg 2825 2820 His Ser Gly Ser Tyr Leu Val Thr Ser Val 2840 2835 <210> 8 <211> 31 <212> PRT <213> Yeast Leu Thr Gly Ala Lys Gly Leu Gln Leu Arg Ala Leu Arg Arg Ile Ala <400> 8 10 Arg Ile Glu Gln Gly Gly Thr Ala Ile Ser Pro Thr Ser Pro Leu 25 20 <210> 9 <211> 29 <212> PRT <213> Homo sapiens Leu Tyr Trp Arg Ile Tyr Lys Glu Thr Glu Lys Arg Thr Lys Glu Leu 10 5 Ala Gly Leu Gln Ala Ser Gly Thr Glu Ala Glu Thr Glu

<210> 10 <211> 29 <212> PRT <213> Homo sapiens <400> 10 Leu Tyr Pro Asn Leu Ala Glu Glu Arg Ser Arg Trp Glu Lys Gru Leu 10 Ala Gly Leu Arg Glu Glu Asn Glu Ser Leu Thr Ala Met <210> 11 <211> 40 <212> DNA <213> Homo sapiens <400> 11 40 gtatcaagac tgtgactttt aattgtagtt tatccatttt <210> 12 <211> 40 <212> DNA <213> Homo sapiens <400> 12 40 tttagaattt catgttaata tattgtgttc tttttaacag <210> 13 <211> 40 <212> DNA <213> Homo sapiens <400> 13 40 gtagatttta aaaaggtgtt ttaaaataat tttttaagct <210> 14 <211> 40 <212> DNA <213> Homo sapiens <400> 14 40 aagcaattgt tgtataaaaa cttgtttcta ttttatttag <210> 15 <211> 40 <212> DNA <213> Homo sapiens <400> 15 40 gtaacttttc ttcatatagt aaacattgcc ttgtgtactc <210> 16 <211> 40 <212> DNA <213> Homo sapiens <220>

<221> misc\_feature <222> (1)...(40) <223> n = A,T,C or G

<400> 16 nnnnnnnnn nnngtccctt tttttaaaaa aaaaaaatag	40
<210> 17 <211> 40 <212> DNA <213> Homo sapiens	
<400> 17 gtaagtaact tggcagtaca acttatttga aactttaata	40
<210> 18 <211> 40 <212> DNA <213> Homo sapiens	
<400> 18 atacaagata ttgatacttt tttattattt gtggttttag	40
<210> 19 <211> 40 <212> DNA <213> Homo sapiens	
<400> 19 gtaagttact tgtttctaag tgataaaaca gygaagagct	40
<210> 20 <211> 40 <212> DNA <213> Homo sapiens	
<400> 20 aataaaaaca taactaatta ggtttcttgt tttattttag	40
<210> 21 <211> 40 <212> DNA <213> Homo sapiens	
<400> 21 gttagtaaat tscctttttt gtttgtgggt ataaaaatag	40
<210> 22 <211> 40 <212> DNA <213> Homo sapiens	
<400> 22 accatttttg catgtactga tgttaactcc atcttaacag	40
` <210> 23 <211> 40 <212> DNA <213> Homo sapiens	

<400> 23 gtaaataaat tattttatca tattttttaa aattatttaa	40
<210> 24 <211> 64 <212> DNA <213> Homo sapiens	
<400> 24 catgatgtta totgtattta cotatagtot aaattataco atotataatg tgott ttag	caattt 60 64
<210> 25 <211> 52 <212> DNA <213> Homo sapiens	
<400> 25 gtaacagaag attacaaacc ctggtcacta atgccatgac tactttgcta ag	52
<210> 26 <211> 46 <212> DNA <213> Homo sapiens	
<400> 26 ggatattaaa gtcgtaattt tgtttctaaa ctcatttggc ccacag	46
<210> 27 <211> 40 <212> DNA <213> Homo sapiens	
<400> 27 gtatgttctc tatagtgtac atcgtagtgc atgtttcaaa	40
<210> 28 <211> 56 <212> DNA <213> Homo sapiens	
<400> 28 catcattgct cttcaaataa caaagcatta tggtttatgt tgattttatt ttt	cag 56
<210> 29 <211> 43 <212> DNA <213> Homo sapiens	
<400> 29 gtaagacaaa aatgtttttt aatgacatag acaattactg gtg	43
<210> 30 <211> 40	

•	
<212> DNA <213> Homo sapiens	
<400> 30 ttagatgatt gtctttttcc tcttgccctt tttaaattag	40
<210> 31 <211> 44 <212> DNA <213> Homo sapiens	
$<\!400\!>31$ gtatgttttt ataacatgta tttcttaaga tagctcaggt atga	44
<210> 32 <211> 54 <212> DNA <213> Homo sapiens	
<220> <221> misc_feature <222> (1)(54) <223> n = A,T,C or G	
<400> 32 gcttggcttc aagttgnctt tttaatgatc ctctattctg tatttaattt acag	54
<210> 33 <211> 65 <212> DNA <213> Homo sapiens	
<400> 33 gtactattta gaatttcacc tgtttttctt ttttctcttt ttctttgagg cagggtctca ctctg	60 65
<210> 34 <211> 52 <212> DNA <213> Homo sapiens	
<400> 34 gcaactagta tgattttatg tataaattaa tctaaaattg attaatttcc ag	52
<210> 35 <211> 42 <212> DNA <213> Homo sapiens	
<400> 35 gtacctttga aaacatttag tactataata tgaatttcat gt	42
<210> 36 <211> 40 <212> DNA	

- 25 -

<213> Homo sapiens	
<220> <221> misc_feature <222> (1)(40) <223> n = A,T,C or G	
<400> 36 ccaactcnaa ttagatgacc catattcaga aacttactag	40
<210> 37 <211> 54 <212> DNA <213> Homo sapiens	
<400> 37 gtatatatag agttttatat tacttttaaa gtacagaatt catactctca aaaa	54
<210> 38 <211> 41 <212> DNA <213> Homo sapiens	
<400> 38 attgtgacct taattttgtg atctcttgat ttttatttca g	41
<210> 39 <211> 18 <212> DNA <213> Homo sapiens	
<400> 39 teccegeetg eegetete	18
<210> 40 <211> 18 <212> DNA <213> Homo sapiens	
<400> 40 gcagcggcgg ctcccgtg	18
<210> 41 <211> 20 <212> DNA <213> Homo sapiens	
<400> 41 gtgaacggct ctcatgctgc	20
<210> 42 <211> 19 <212> DNA <213> Homo sapiens	

<400> 42 acgtgcgggg aggaatgga	19
<210> 43 <211> 24 <212> DNA <213> Homo sapiens	
<400> 43 atgatatett accaaatgat atac	24
<210> 44 <211> 23 <212> DNA <213> Homo sapiens	
<400> 44 ttattcctac ttcttctata cag	23
<210> 45 <211> 21 <212> DNA <213> Homo sapiens	
<400> 45 tacccatgct ggctcttttt c	21
<210> 46 <211> 20 <212> DNA <213> Homo sapiens	
<400> 46 tggggccatc ttgttcctga	20
<210> 47 <211> 22 <212> DNA <213> Homo sapiens	
<400> 47 acattaggca caaagcttgc aa	22
<210> 48 <211> 22 <212> DNA <213> Homo sapiens	
<400> 48 atcaagctcc agtaagaagg ta	22
<210> 49 <211> 19 <212> DNA <213> Homo sapiens	

<400> 49 tgcggctcct gggttgttg	19
<210> 50 <211> 20 <212> DNA <213> Homo sapiens	
<400> 50 gccccttcct ttctgaggac	20
<210> 51 <211> 21 <212> DNA <213> Homo sapiens	
<400> 51 ttttctcctg cctcttactg c	21
<210> 52 <211> 20 <212> DNA <213> Homo sapiens	
<400> 52 atgacacccc ccattecctc	20
<210> 53 <211> 24 <212> DNA <213> Homo sapiens	
<400> 53 ccacttaaag cacatatatt tagt	24
<210> 54 <211> 22 <212> DNA <213> Homo sapiens	
<400> 54 gtatggaaaa tagtgaagaa cc	22
<210> 55 <211> 24 <212> DNA <213> Homo sapiens	
<400> 55 ttcttaagtc ctgtttttct tttg	24
<210> 56 <211> 23 <212> DNA	

- 28 -

<213> Homo sapiens	
<400> 56 tttagaacct tttttgtgtt gtg	23
<210> 57 <211> 24 <212> DNA <213> Homo sapiens	
<400> 57 ctcagattat acactaagcc taac	24
<210> 58 <211> 22 <212> DNA <213> Homo sapiens	
<400> 58 catgtctctt acagtagtac ca	22
<210> 59 <211> 20 <212> DNA <213> Homo sapiens	
<400> 59 aggtccaagg gtagccaagg	20
<210> 60 <211> 27 <212> DNA <213> Homo sapiens	
<400> 60 taaaaatgga taaactacaa ttaaaag	27
<210> 61 <211> 24 <212> DNA <213> Homo sapiens	
<400> 61 aaatacagaa tcatgtcttg aagt	24
<210> 62 <211> 23 <212> DNA <213> Homo sapiens	
<400> 62 acacctaaag atgacaattt gag	23
<210> 63 <211> 24	

<212> DNA <213> Homo sapiens	
<400> 63 taacttagat agcagtaatt teee	24
<210> 64 <211> 23 <212> DNA <213> Homo sapiens	
<400> 64 acaataaact ggagtacaca agg	23
<210> 65 <211> 23 <212> DNA <213> Homo sapiens	
<400> 65 ataggtcatt gcttcttgct gat	23
<210> 66 <211> 24 <212> DNA <213> Homo sapiens	
<400> 66 tgaattttaa tggattacct aggt	24
<210> 67 <211> 25 <212> DNA <213> Homo sapiens	
<400> 67 ctttttttgc ttttactgat taacg	25
<210> 68 <211> 27 <212> DNA <213> Homo sapiens	
<400> 68 tgtaattcat tttattccta atacctc	27
<210> 69 <211> 24 <212> DNA <213> Homo sapiens	
<400> 69 ggtagccata gtatgattat ttct	24

<210> 70

<211> 24 <212> DNA <213> Homo sapiens	
<400> 70 ctacctattt ttatacccac aaac	24
<210> 71 <211> 23 <212> DNA <213> Homo sapiens	
<400> 71 aagaaagcct acaccatttt tgc	23
<210> 72 <211> 23 <212> DNA <213> Homo sapiens	
<400> 72 gatcattctt agaaccatct tgc	23
<210> 73 <211> 24 <212> DNA <213> Homo sapiens	
<400> 73 acctatagtc taaattatac catc	24
<210> 74 <211> 20 <212> DNA <213> Homo sapiens	
<400> 74 gtcatggcat tagtgaccag	20
<210> 75 <211> 24 <212> DNA <213> Homo sapiens	
<400> 75 agtcgtaatt ttgtttctaa actc	24
<210> 76 <211> 21 <212> DNA <213> Homo sapiens	
<400> 76 tgaaggaete ggattteace e	21

<210> 77 <211> 23 <212> DNA <213> Homo sapiens	
<400> 77 tcattcactc acagcctgat gac	23
<210> 78 <211> 22 <212> DNA <213> Homo sapiens	
<400> 78 gctttgaaac atgcactacg at	22
<210> 79 <211> 24 <212> DNA <213> Homo sapiens	
<400> 79 aaacatcatt gctcttcaaa taac	24
<210> 80 <211> 24 <212> DNA <213> Homo sapiens	
<400> 80 taccatgatt taaaaatcca ccag	24
<210> 81 <211> 23 <212> DNA <213> Homo sapiens	
<400> 81 gatgattgtc tttttcctct tgc	23
<210> 82 <211> 24 <212> DNA <213> Homo sapiens	
<400> 82 ctgagctatc ttaagaaata catg	24
<210> 83 <211> 25 <212> DNA <213> Homo sapiens	
<400> 83 ttttaaatga teetetatte tgtat	25

CH

<210> 84 <211> 24 <212> DNA <213> Homo	sapiens	
<400> 84 acagagtcag	accetgeete aaag	24
<210> 85 <211> 23 <212> DNA <213> Homo	sapiens	
<400> 85 tttctattct	tactgctagc att	23
<210> 86 <211> 22 <212> DNA <213> Homo	sapiens	
<400> 86 atacacaggt	aagaaattag ga	22
<210> 87 <211> 22 <212> DNA <213> Homo	sapiens	
<400> 87 tagatgacco	e atattetgtt te	22
<210> 88 <211> 22 <212> DNA <213> Homo	o sapiens	
<400> 88 caattaggto	c tttttgagag ta	22
<210> 89 <211> 22 <212> DNA <213> Home	o sapiens	
<400> 89 gttactgca	t acacattgtg ac	22
<210> 90 <211> 23 <212> DNA <213> Hom	no sapiens	



•	~ ~
gctttttgtt tcctaacatg aag	23
<210> 91 <211> 21 <212> DNA <213> Homo sapiens	
<400> 91 tctcccacag gtaatactcc c	21
<210> 92 <211> 21 <212> DNA <213> Homo sapiens	
<400> 92 gctagaactg aatggggtac g	21
<210> 93 <211> 22 <212> DNA <213> Homo sapiens	
<400> 93 caggacaaaa taatcctgtc cc	22
<210> 94 <211> 24 <212> DNA <213> Homo sapiens	
<400> 94 attttcttag tttcattctt cctc	24
<210> 95 <211> 25 <212> DNA <213> Homo sapiens	
<400> 95 agaaggatcc cttgtgcagt gtgga	25
<210> 96 <211> 24 <212> DNA <213> Homo sapiens	
<400> 96 gacaggatcc tgaagctgag tttg	24
<210> 97 <211> 18 <212> DNA <213> Homo sapiens	

<400> 97 tcagaaagtg ctgaagag	18
<210> 98 <211> 19 <212> DNA <213> Homo sapiens	
<400> 98 ggaataatta ggtctccaa	19
<210> 99 <211> 21 <212> DNA <213> Homo sapiens	
<400> 99 gcaaatccta agagagaaca a	21
<210> 100 <211> 19 <212> DNA <213> Homo sapiens	
<400> 100 gatggcaagc ttgagccag	19
<210> 101 <211> 18 <212> DNA <213> Homo sapiens	
<400> 101 gttccagcag tgtcacag	18
<210> 102 <211> 18 <212> DNA <213> Homo sapiens	
<400> 102 gggagatttc gctcctga	18
<210> 103 <211> 23 <212> DNA <213> Homo sapiens	
<400> 103 agtacaagga tgccaatatt atg	23
<210> 104 <211> 23 <212> DNA <213> Homo sapiens	

<400> 104 acttctatct ttttcagaac gag	23
<210> 105 <211> 23 <212> DNA <213> Homo sapiens	
<400> 105 atttgaatac tacagtgtta ccc	23
<210> 106 <211> 24 <212> DNA <213> Homo sapiens	
<400> 106 cttgtattct aatttggcat aagg	24
<210> 107 <211> 22 <212> DNA <213> Homo sapiens	
<400> 107 ctgcccatac acattcaaac ac	22
<210> 108 <211> 21 <212> DNA <213> Homo sapiens	
<400> 108 tgtttgcgtc ttgcccatct t	21
<210> 109 <211> 24 <212> DNA <213> Homo sapiens	
<400> 109 agtcttaaat attcagatga gcag	24
<210> 110 <211> 26 <212> DNA <213> Homo sapiens	
<400> 110 gtttctcttc attatatttt atgcta	26
<210> 111 <211> 23 <212> DNA	

<213> Homo sapiens		
<400> 111 aagcctacca attatagtga	acg	23
<210> 112 <211> 23 <212> DNA <213> Homo sapiens		
<400> 112 agctgatgac aaagatgata	a atc	23
<210> 113 <211> 24 <212> DNA <213> Homo sapiens		
<400> 113 aagaaacaat acagacttat	t tgtg	24
<210> 114 <211> 20 <212> DNA <213> Homo sapiens		
<400> 114 atgagtgggg tctcctgaa	С	20
<210> 115 <211> 21 <212> DNA <213> Homo sapiens		
<400> 115 atctccctcc aaaagtggt	eg c	21
<210> 116 <211> 22 <212> DNA <213> Homo sapiens		
<400> 116 tccatctgga gtactttct	ng tg	22
<210> 117 <211> 22 <212> DNA <213> Homo sapiens		
<400> 117 agtaaatgct gcagttcag	ga gg	22
<210> 118 <211> 19		

<	<212> DNA <213> Homo sapiens	
< C	<400> 118 ccgtggcata tcatcccc	19
<	<210> 119 <211> 22 <212> DNA <213> Homo sapiens	
•	<400> 119 cccagactgc ttcaaaatta cc	22
٠	<210> 120 <211> 21 <212> DNA <213> Homo sapiens	
	<400> 120 gagecteate tgtaettetg e	21
	<210> 121 <211> 21 <212> DNA <213> Homo sapiens	
	<400> 121 ccctccaaat gagttagctg c	21
	<210> 122 <211> 23 <212> DNA <213> Homo sapiens	
	<400> 122 ttgtggtata ggttttactg gtg	23 .
	<210> 123 <211> 23 <212> DNA <213> Homo sapiens	
	<400> 123 acccaacaaa aatcagttag atg	23
	<210> 124 <211> 21 <212> DNA <213> Homo sapiens	
	<400> 124 gtggctggta actttagcct c	21

<210> 125

ı	
<pre>&lt;211&gt; 21 &lt;212&gt; DNA &lt;213&gt; Homo sapiens</pre>	
<400> 125 atgatgttga cctttccagg g	21
<210> 126 <211> 24 <212> DNA <213> Homo sapiens	
<400> 126 attgtgtaac ttttcatcag ttgc	24
<210> 127 <211> 21 <212> DNA <213> Homo sapiens	
<400> 127 aaagacatac cagacagagg g	21
<210> 128 <211> 21 <212> DNA <213> Homo sapiens	
<400> 128 cttttttggc attgcggagc t	21
<210> 129 <211> 22 <212> DNA <213> Homo sapiens	
<400> 129 aagatgacct gttgcaggaa tg	22
<210> 130 <211> 24 <212> DNA <213> Homo sapiens	
<400> 130 gaatcagacc aagcttgtct agat	24
<210> 131 <211> 24 <212> DNA <213> Homo sapiens	
<400> 131 caatagtaag tagtttacat caag	24

. .

210> 132 2211> 22 212> DNA 2213> Homo sapiens	
<400> 132 aaacaggact tgtactgtag ga	22
<210> 133 <211> 21 <212> DNA <213> Homo sapiens	
<400> 133 cagccccttc aagcaaacat c	21
<210> 134 <211> 22 <212> DNA <213> Homo sapiens	
<400> 134 gaggacttat tccatttcta cc	22
<210> 135 <211> 20 <212> DNA <213> Homo sapiens	
<400> 135 cagtctcctg gccgaaactc	20
<210> 136 <211> 22 <212> DNA <213> Homo sapiens	
<400> 136 gttgactggc gtactaatac ag	22
<210> 137 <211> 23 <212> DNA <213> Homo sapiens	
<400> 137 tggtaatgga gccaataaaa agg	23
<210> 138 <211> 20 <212> DNA <213> Homo sapiens	
<400> 138 tgggactttt cgccatccac	20

<210> 139 <211> 22 <212> DNA <213> Homo sapiens	
<400> 139 tgtctctatc cacacattcg tc	22
<210> 140 <211> 24 <212> DNA <213> Homo sapiens	
<400> 140 atgtttttca teeteaettt ttge	24
<210> 141 <211> 22 <212> DNA <213> Homo sapiens	
<400> 141 ggagaagaac tggaagttca tc	22
<210> 142 <211> 25 <212> DNA <213> Homo sapiens	
<400> 142 ttgaatcttt aatgtttgga tttgc	25
<210> 143 <211> 21 <212> DNA <213> Homo sapiens	
<400> 143 tctcccacag gtaatactcc c	21
<210> 144 <211> 21 <212> DNA <213> Homo sapiens	
<400> 144 gctacaactg aatggggtac g	21
<210> 145 <211> 22 <212> DNA <213> Homo sapiens	

- 41 -

\* 41 - \*

<400> 145

```
22
caggacaaaa taatcctgtc cc
<210> 146
<211> 24
<212> DNA
<213> Homo sapiens
<400> 146
                                                                          24
attttcttac tttcattctt cctc
<210> 147
<211> 16
<212> PRT
<213> Artificial Sequence
<220>
<223> consensus sequence
Phe Val Glu Thr Pro Cys Phe Ser Arg Ser Ser Leu Ser Ser Leu Ser
<210> 148
<211> 20
<212> PRT
<213> Homo sapiens
<400> 148
Tyr Cys Val Glu Asp Thr Pro Ile Cys Phe Ser Arg Cys Ser Ser Leu
 1
Ser Ser Leu Ser
             20
<210> 149
 <211> 20
 <212> PRT
 <213> Homo sapiens
 <400> 149
His Thr Val Gln Glu Thr Pro Leu Met Phe Ser Arg Cys Thr Ser Val
 Ser Ser Leu Asp
 <210> 150
 <211> 20
 <212> PRT
 <213> Homo sapiens
```

<400> 150

Ser Ala Leu Ser

. 4.

10

Phe Ala Thr Glu Ser Thr Pro Asp Gly Phe Ser Cys Ser Ser Ser Leu

<210> 151 <211> 20 <212> PRT <213> Homo sapiens Tyr Cys Val Glu Gly Thr Pro Ile Asn Phe Ser Thr Ala Thr Ser Leu 1 Ser Asp Leu Thr <210> 152 <211> 20 <212> PRT <213> Homo sapiens Thr Pro Ile Glu Gly Thr Pro Tyr Cys Phe Ser Arg Asn Asp Ser Leu 1 Ser Ser Leu Asp 20 <210> 153 <211> 20 <212> PRT <213> Homo sapiens Phe Ala Ile Glu Asn Thr Pro Val Cys Pro Ser His Asn Ser Ser Leu 1 Ser Ser Leu Ser 20

25

<210> 154

Ser Ser Leu Ser

20

1

4.2

<211> 20
<211> 20
<212> PRT
<213> Homo sapiens
<400> 154
Arg His Val Glu Asp Thr Pro Val Cys Phe Ser Arg Asn Ser Ser Leu
10
15